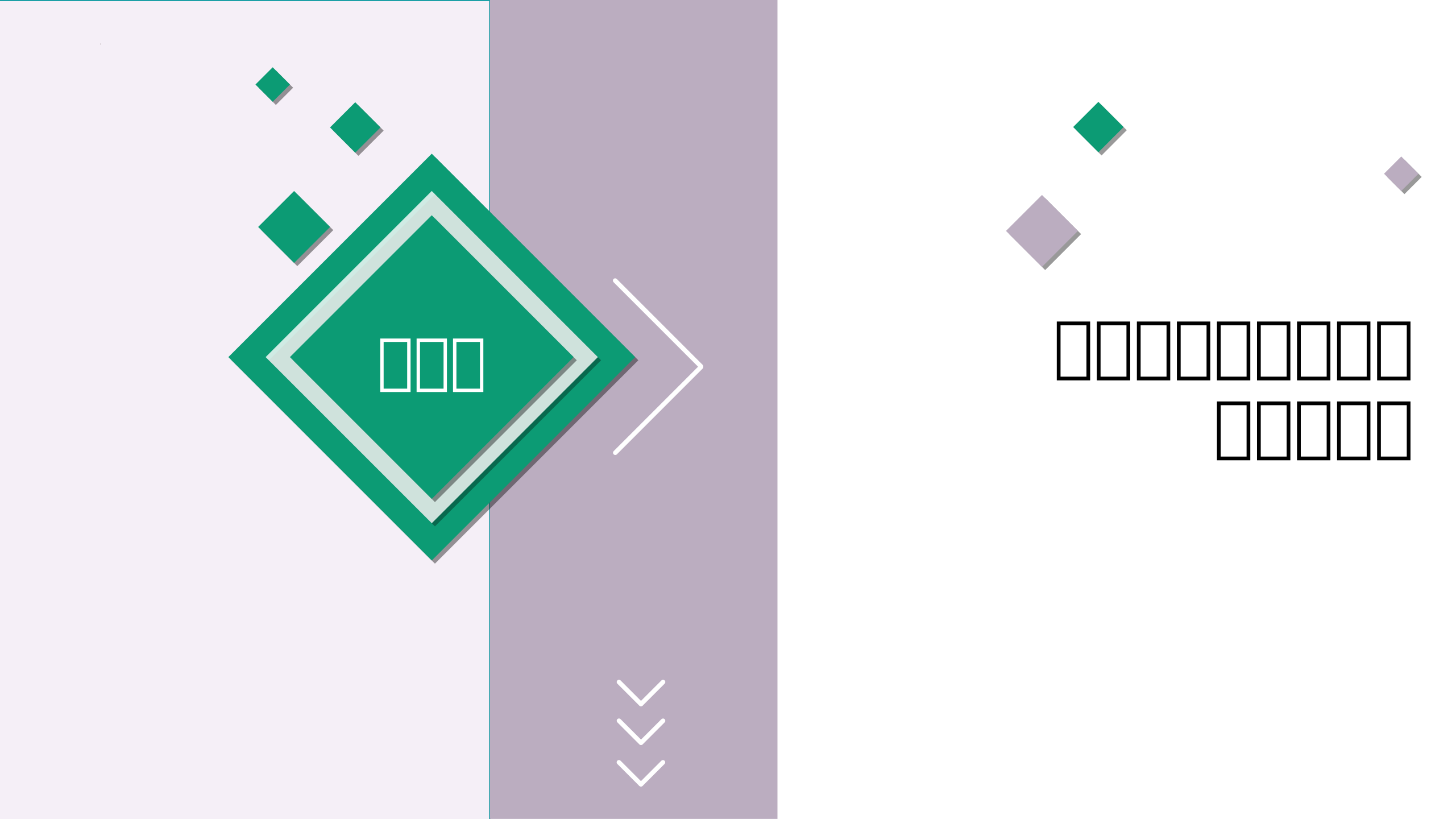
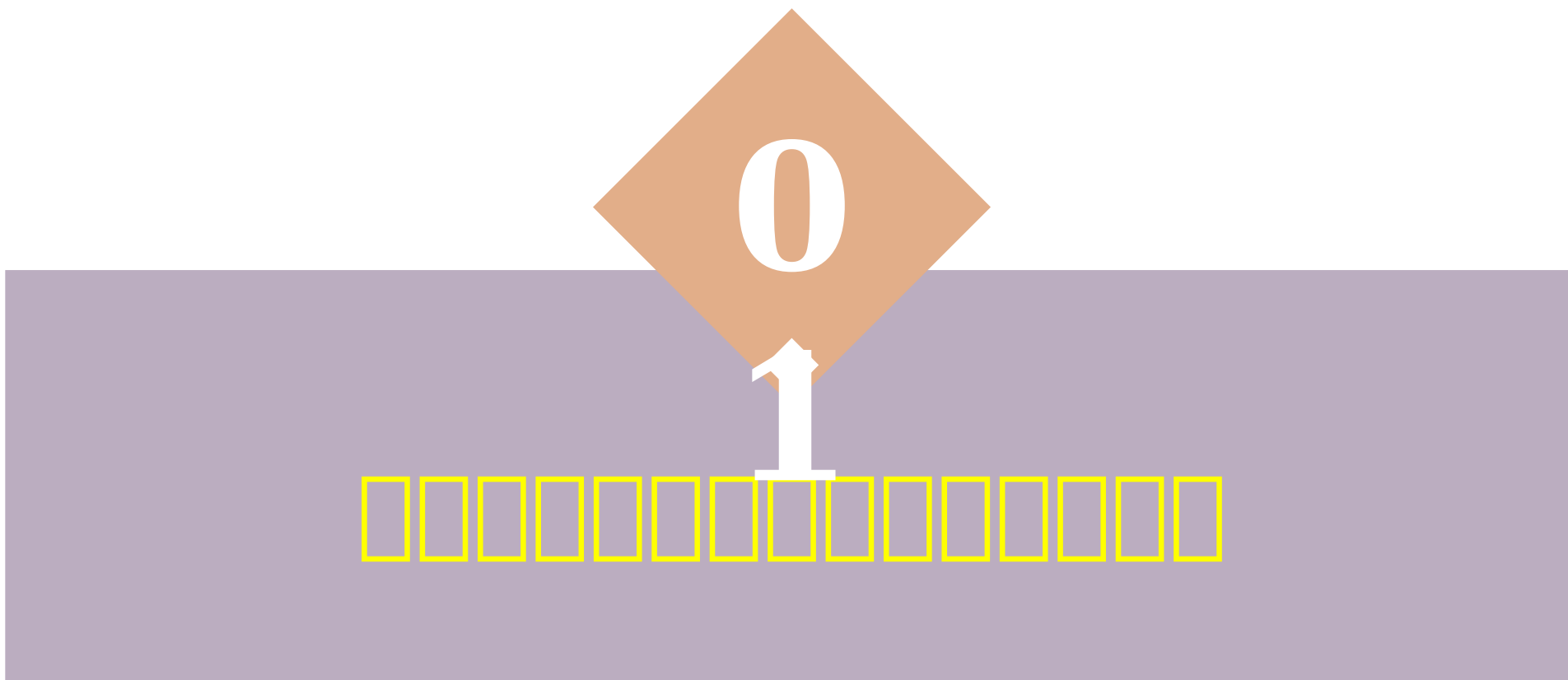
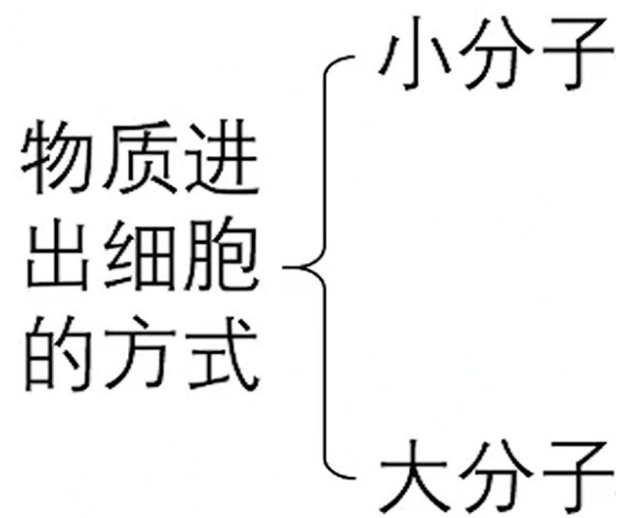


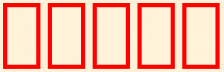
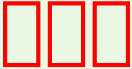
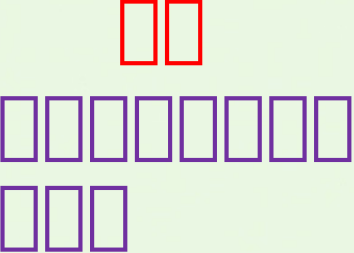
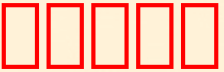
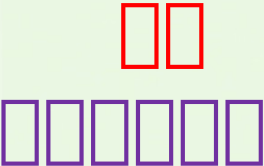




1.物质跨膜运输概览



2.小分子跨膜运输比较

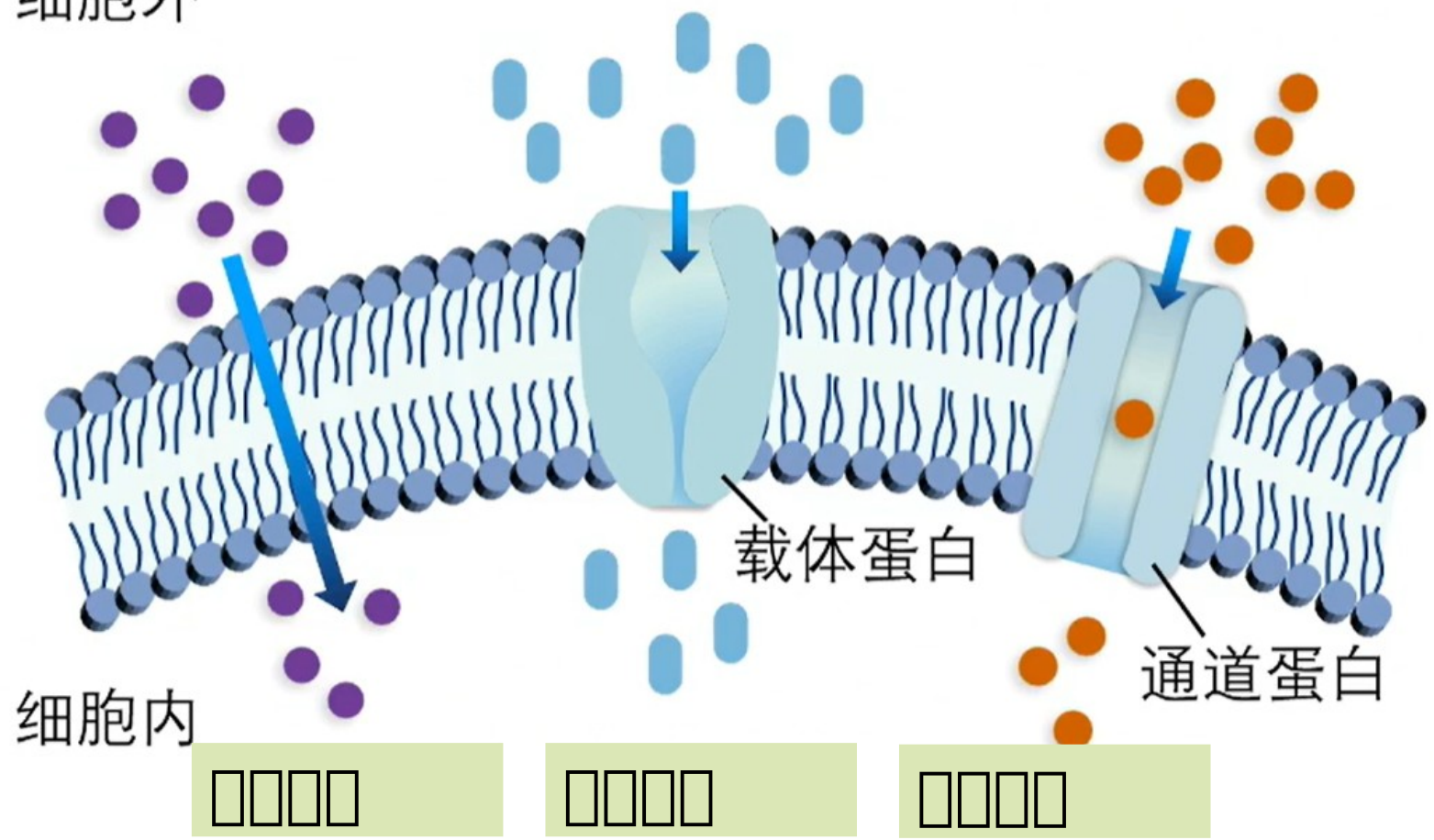
		运输方向	能量	转运蛋白	影响因素	举例
被动运输	自由扩散					
	协助扩散					
						



□□“□□□□”

1. 转运蛋白可以分为 □□□□ 和 □□□□。

细胞外



细胞内

□□□□

□□□□

□□□□

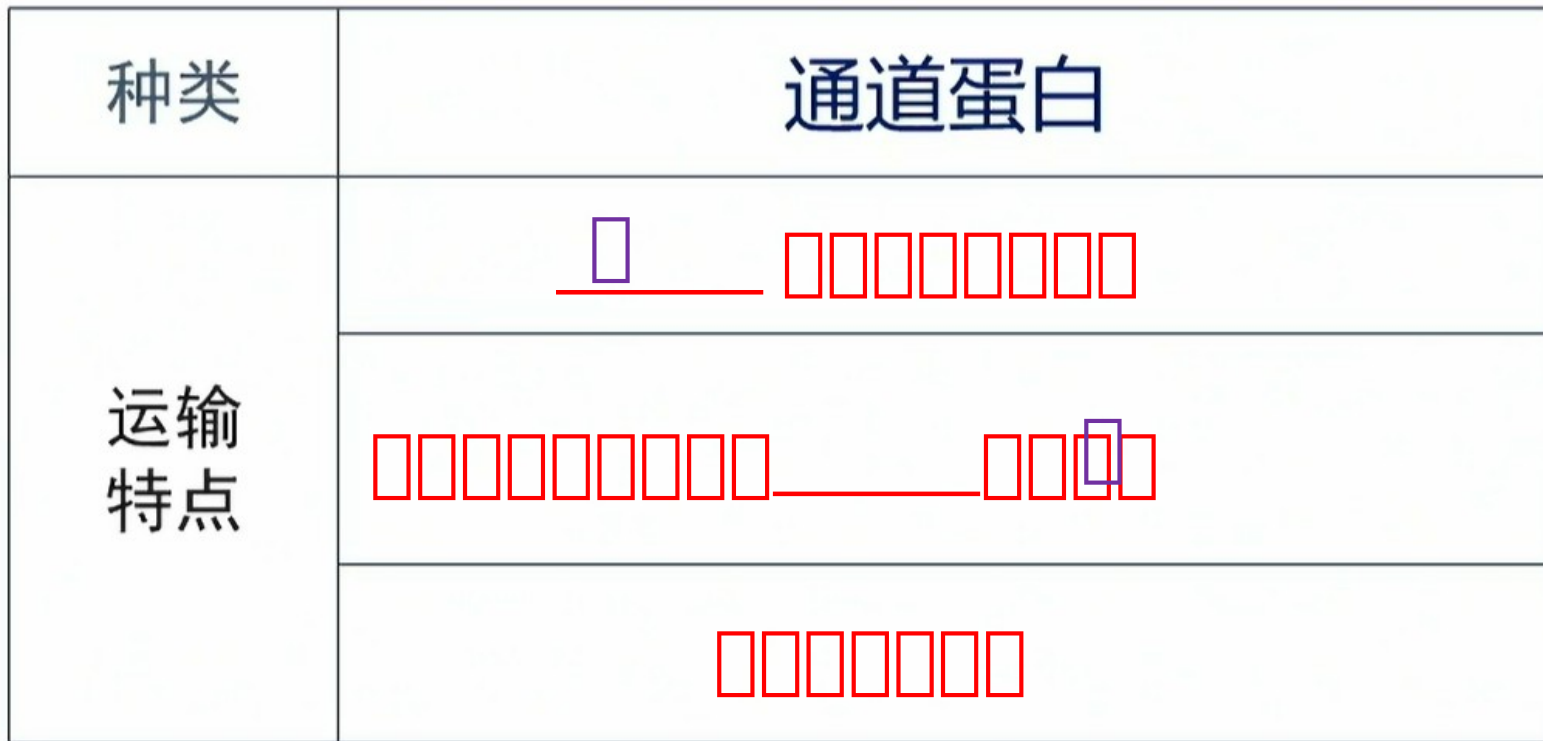


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1111

P67

只容许与自身通道的直径和形状相适配、大小和电荷相适宜的分子或离子通过



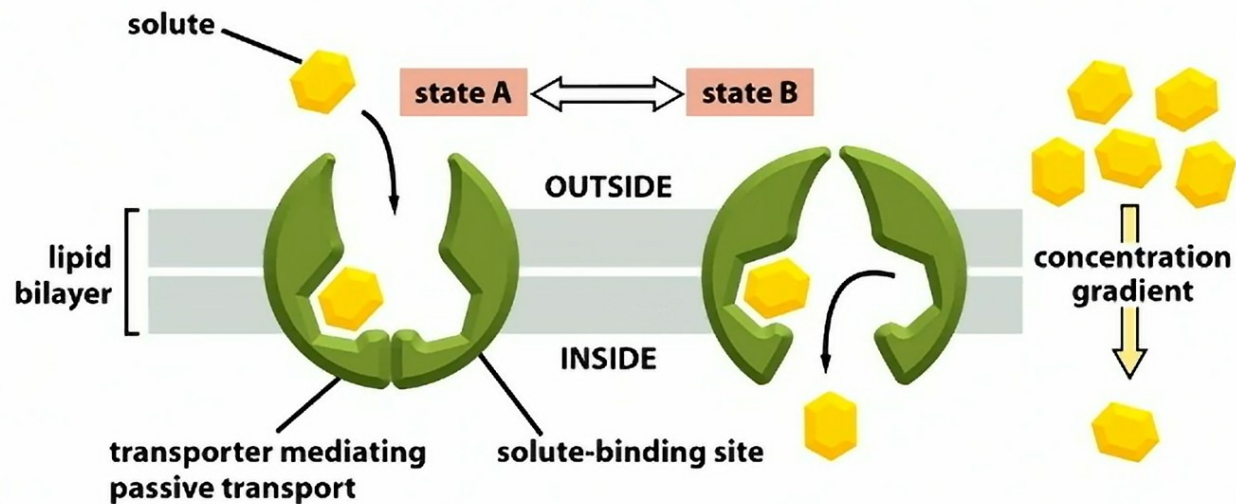


□□“□□□□”

3. 载体蛋白 ➤ □□□□□□□

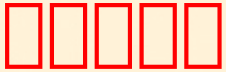
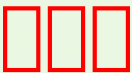
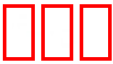
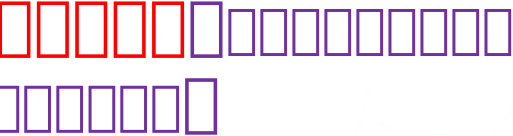
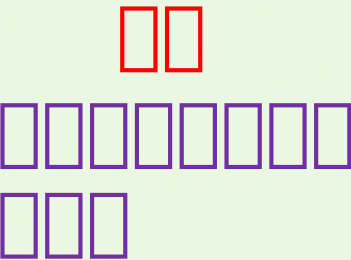
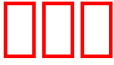
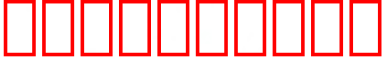
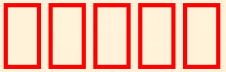
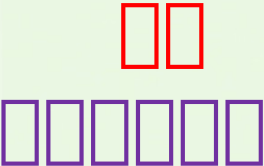
□□□□

只容许与自身结合部位相适应的分子或离子通过 P66



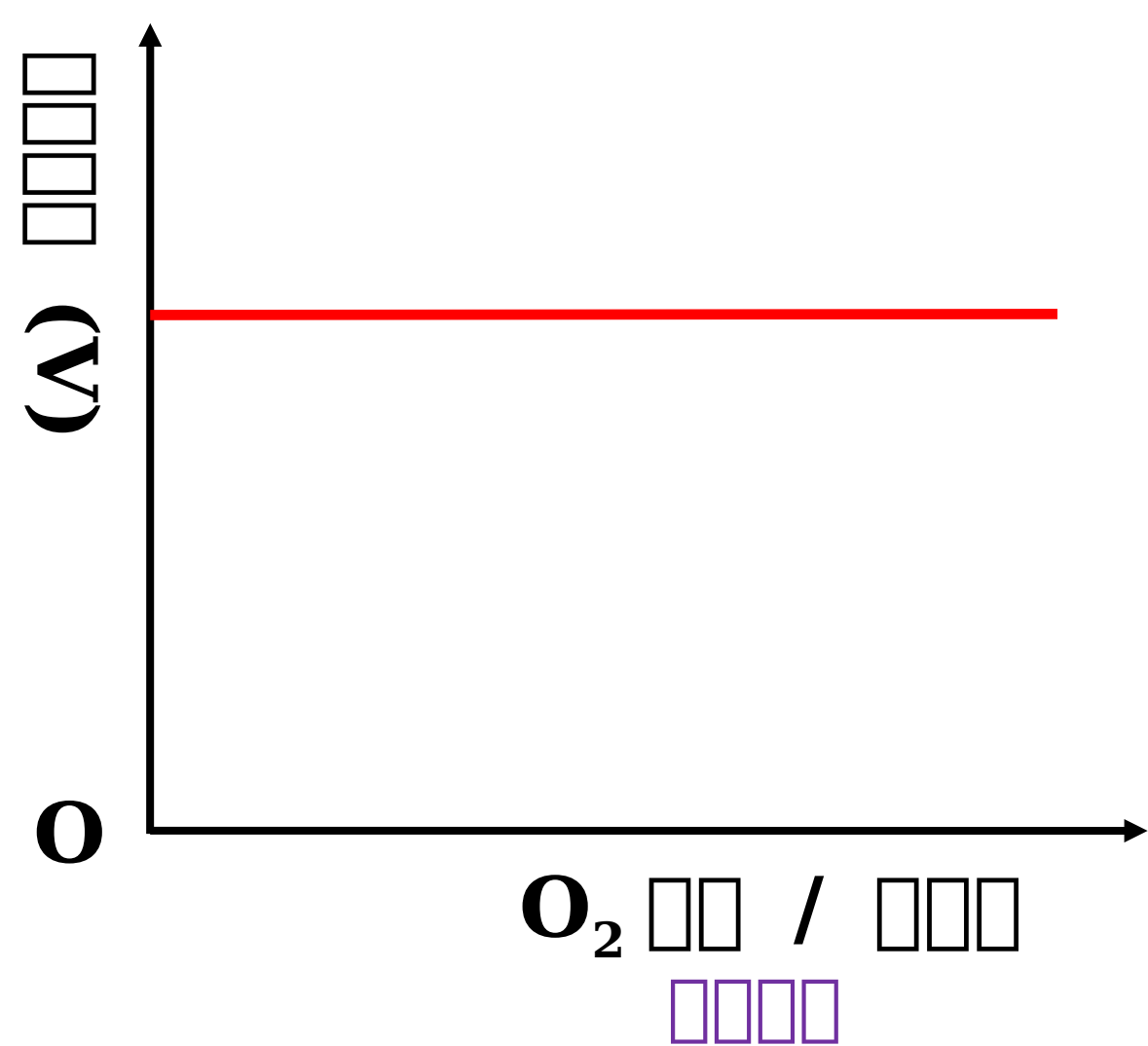
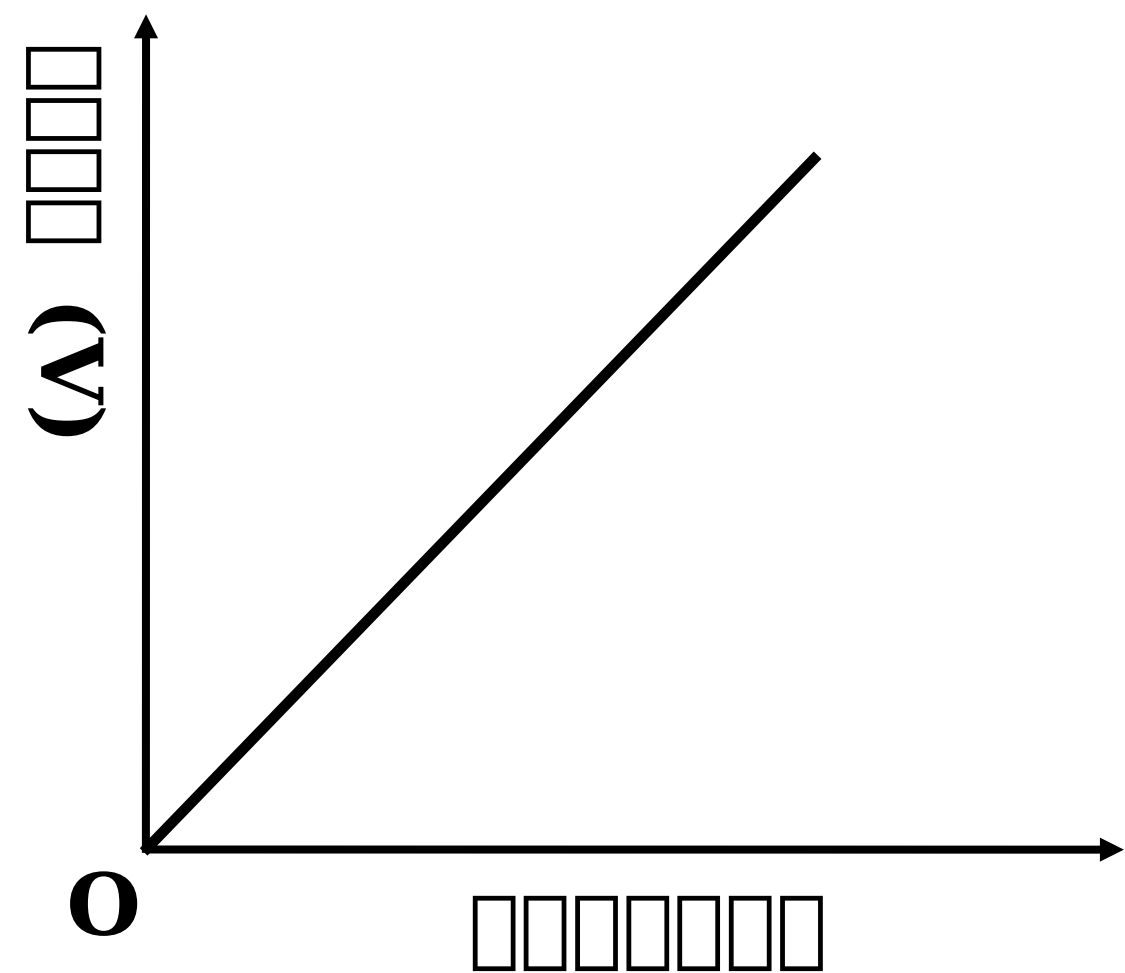
运输特点	_____ □□□□□□□□ □□□□□
	□□□□□□□□□□ _____ □□□□ □□□□□□
	□□□□□□□□□□□□□□□□□□

2.小分子跨膜运输比较

		运输方向	能量	转运蛋白	影响因素	举例
被动运输	自由扩散				①  ② 	①  ②  O_2 CO_2  ③ 
	协助扩散				①  ②  ③ 	①  ②  ③ Na^+  K^+ 
					①  ②  ③ 	①  ②  ...

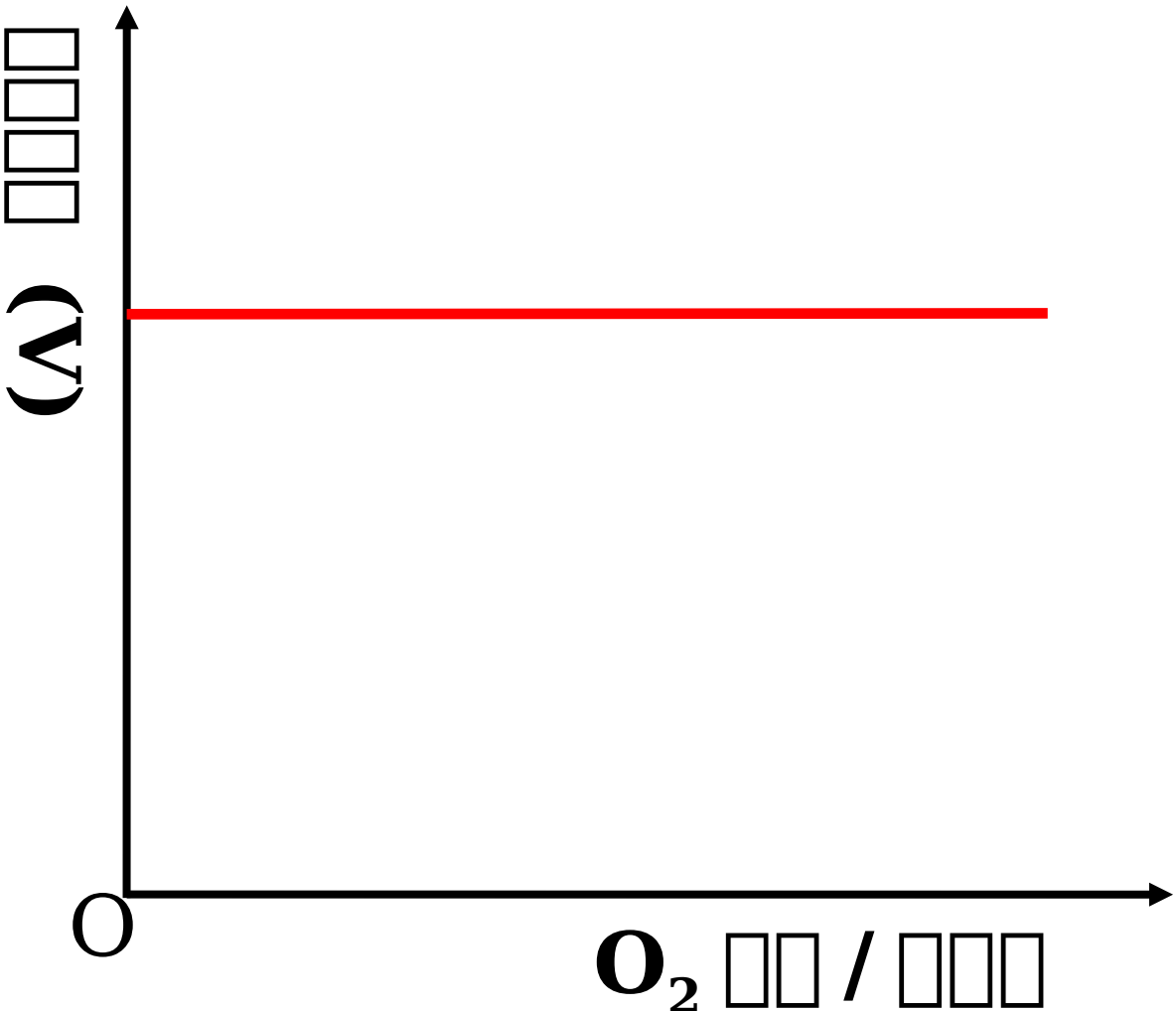
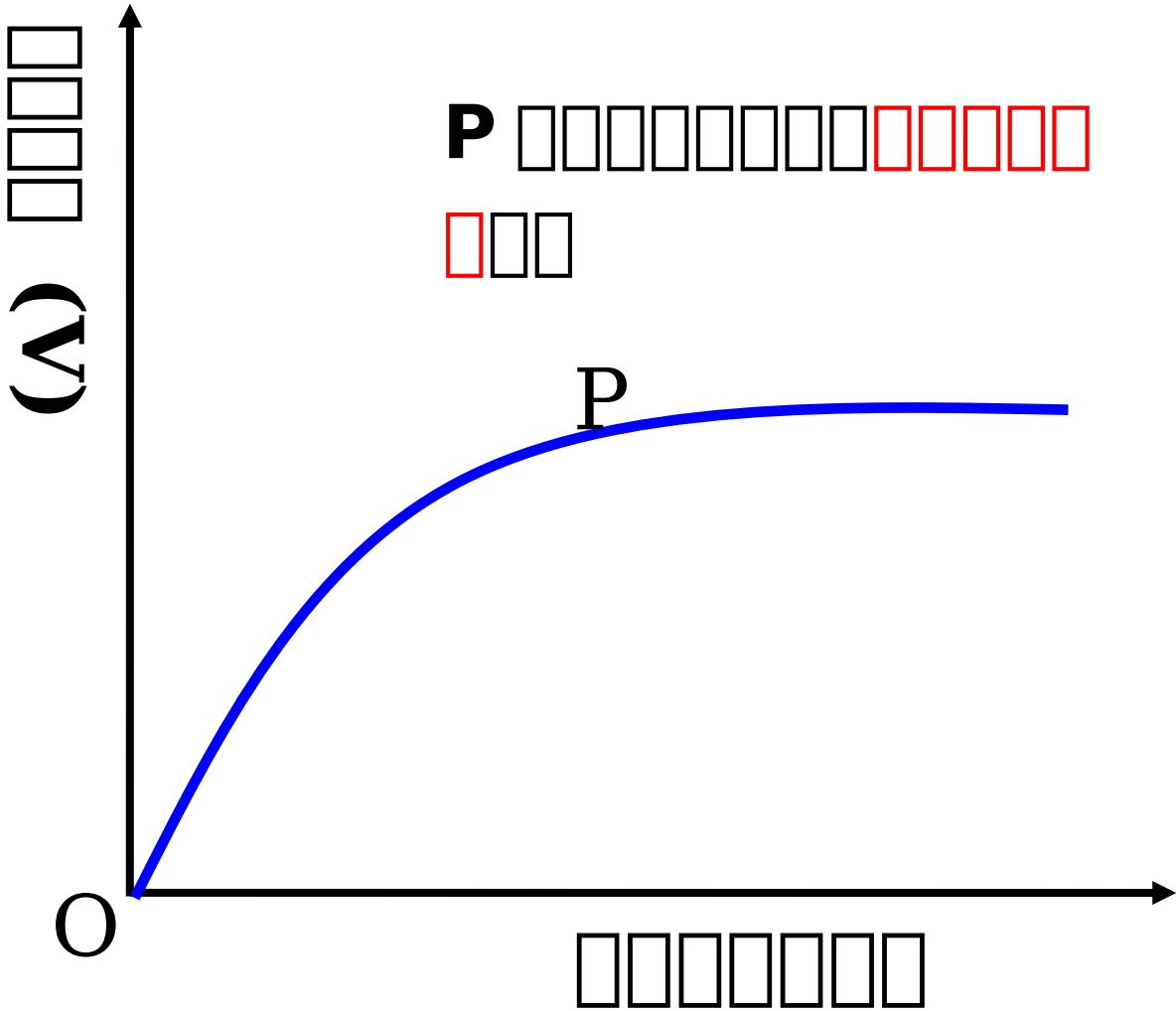
3.小分子运输影响因素的相关图像

(1) 自由扩散



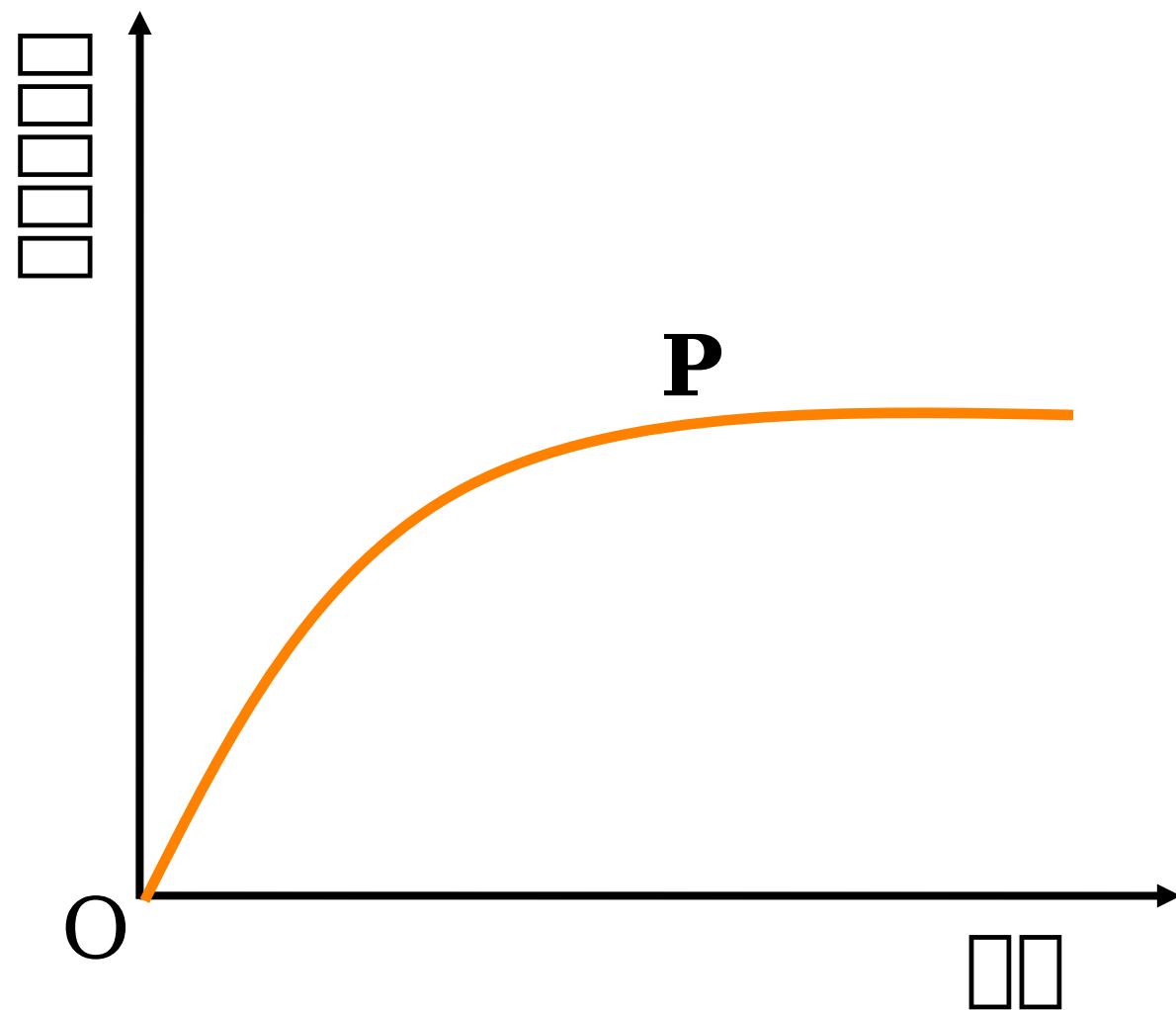
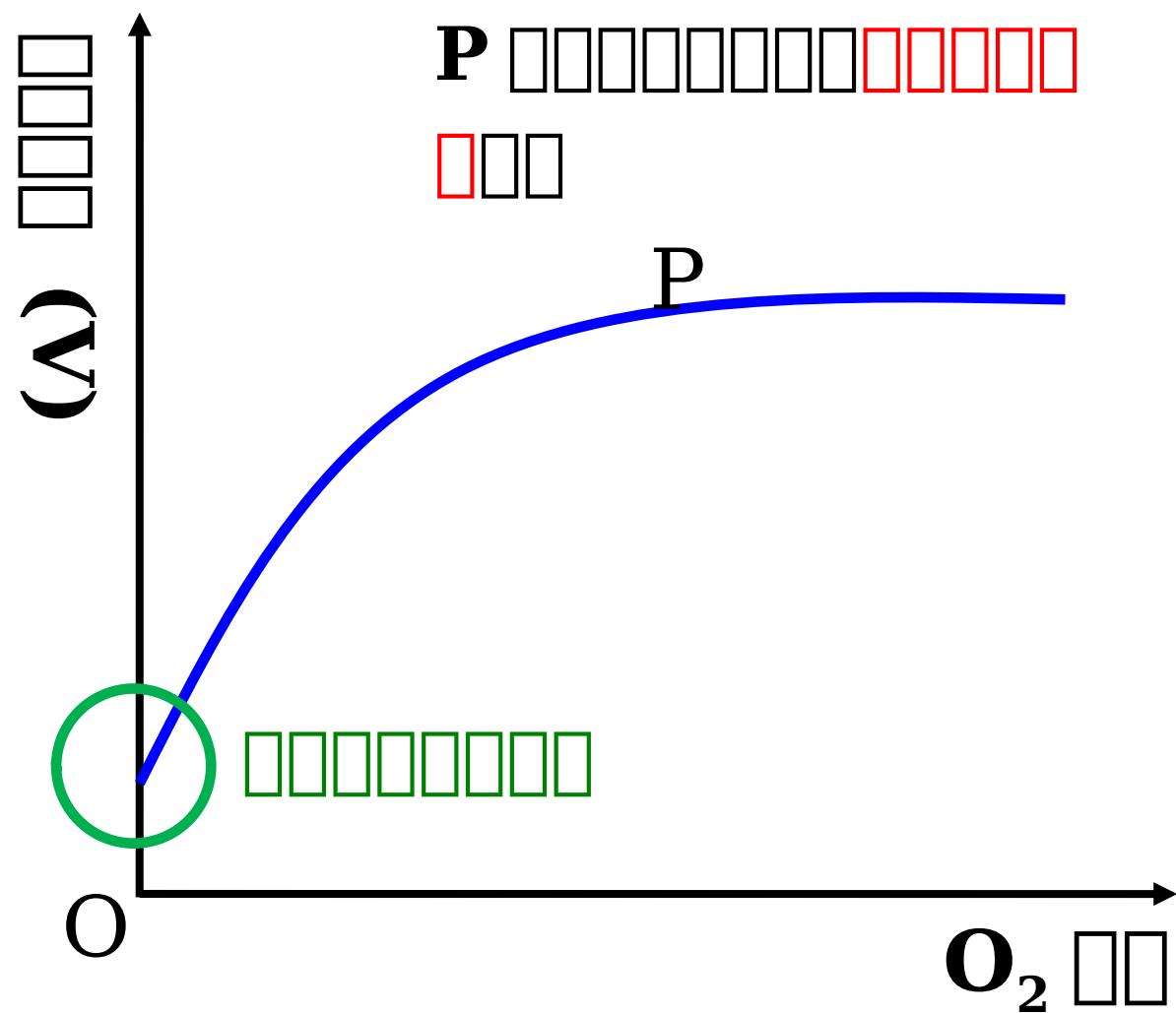
3.小分子运输影响因素的相关图像

(2) 协助扩散



3.小分子运输影响因素的相关图像

(3) 主动运输

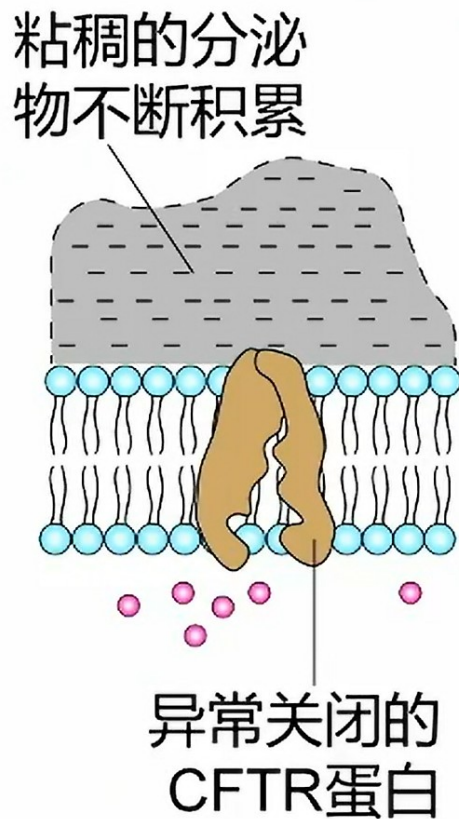
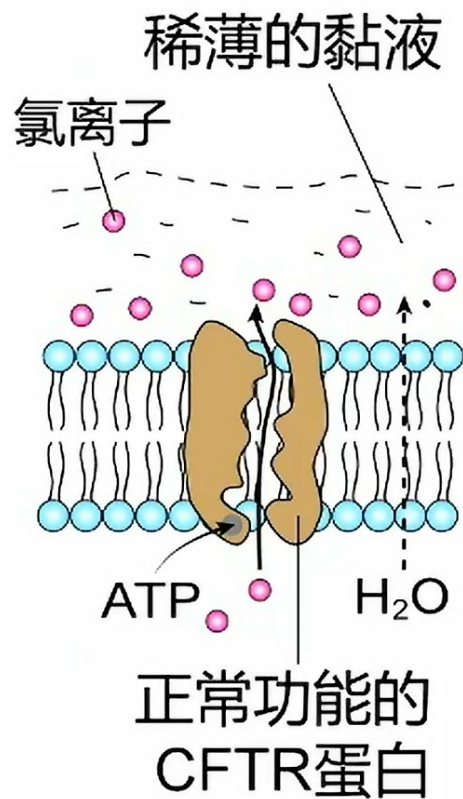
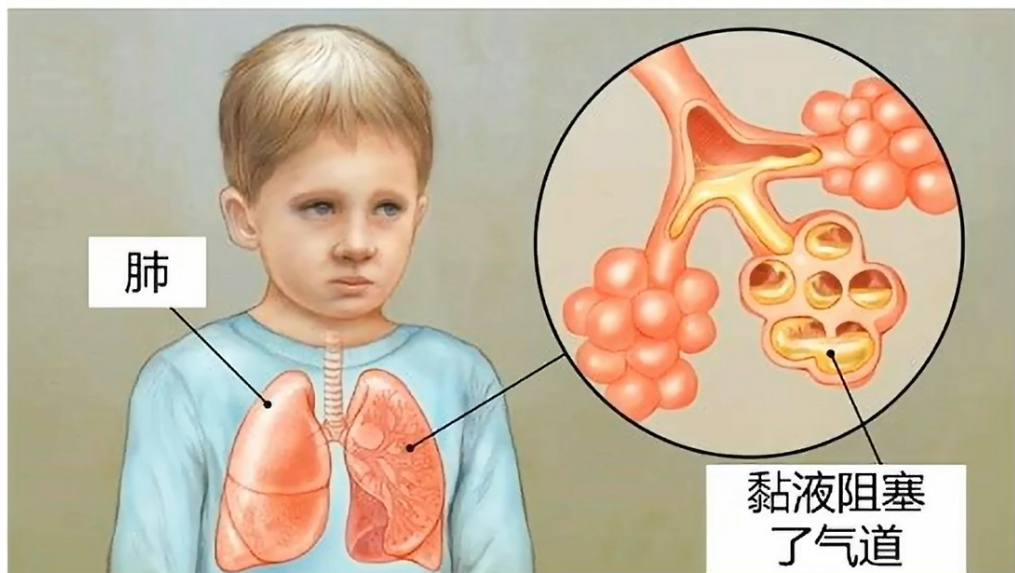




□□□□□□

P70 ——

□□□□□□



直接原因是 □□ **Cl⁻** □□□□□□□□□□ ,

根本原因是 □□□□□□□□□□□□□□ 。



□□□□□□□□□□

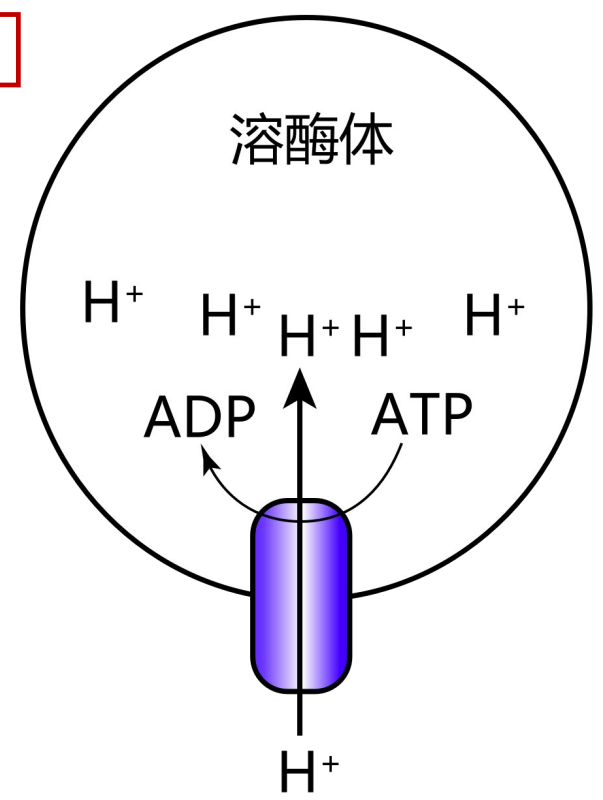
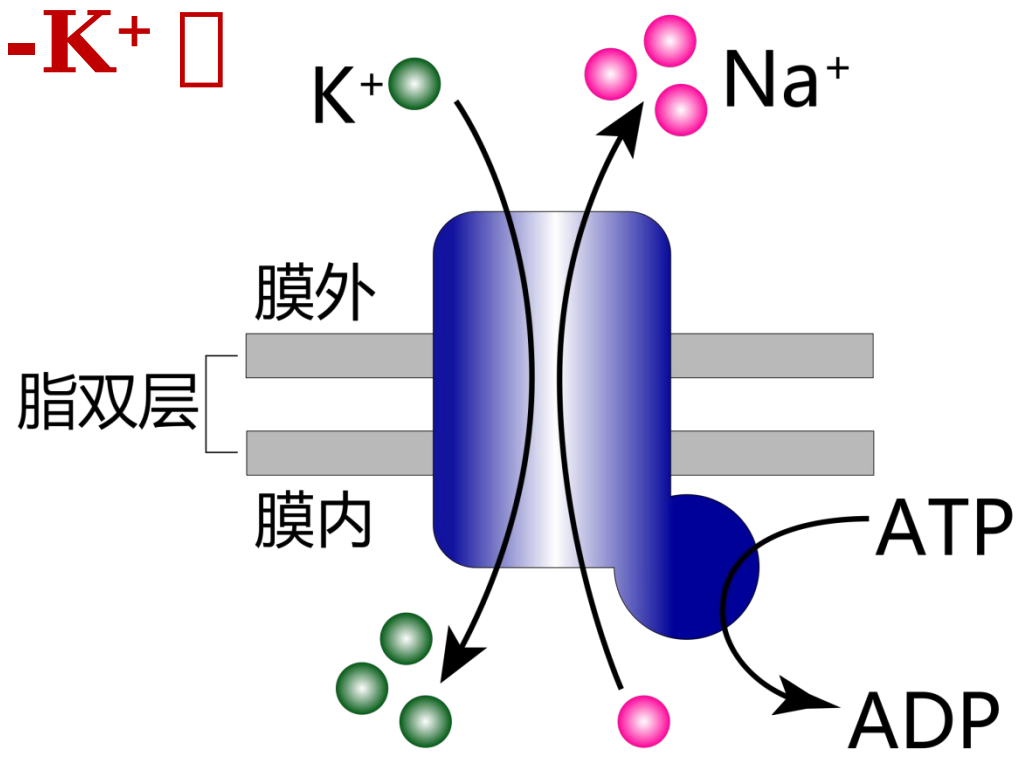
{ □□□□ ATP
□□□□ ATP

□ 1 □□□□□ ATP □□□□□

□□□□□□ ATP □□□□

Na⁺-K⁺ □

H⁺ □



ATP □□□□□□□□□□ **ATP** □□□



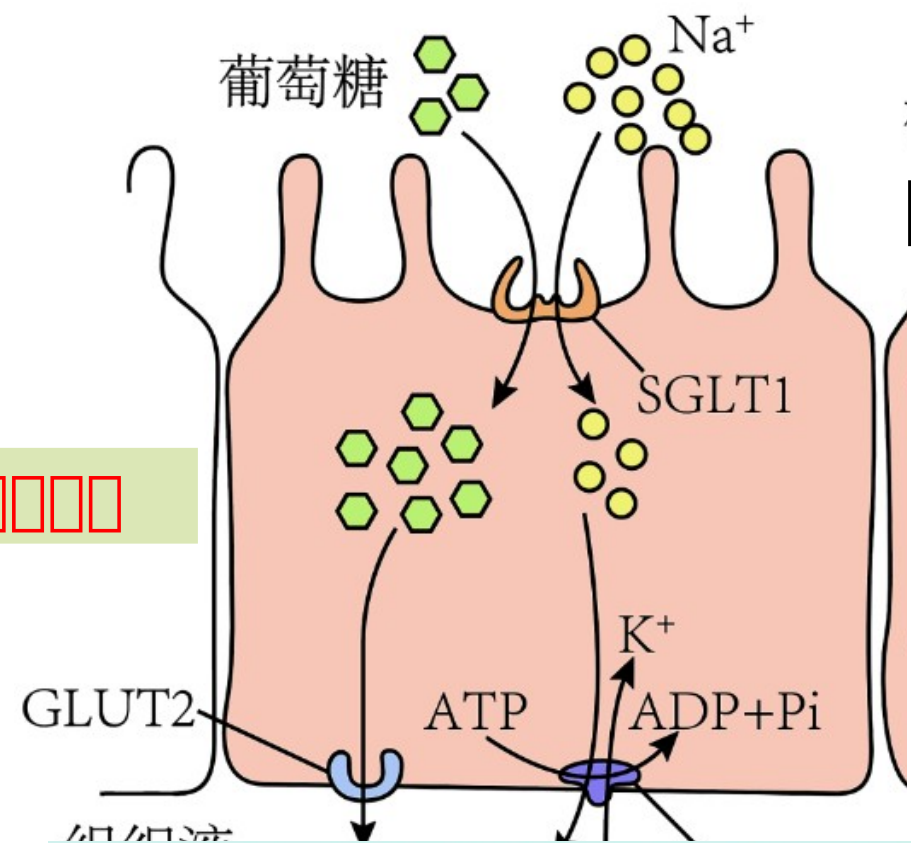
□□□□□□□□□□

□□□□ ATP
□□□□ ATP

□ 2 □□□□□ ATP □□□□□

□□

□□□□□□



□□□□□□□□
□□□□□ ATP □□□□□ Na+ □□□□□□□□



Na+ □□□□□□□□ Na+ - K+ □□□ Na+ -
K+ □□□□□ ATP □

□□□□□□□□□□□□□□□□

主动运输消耗的能量可来自ATP、离子电化学梯度、光驱动泵（细菌）等

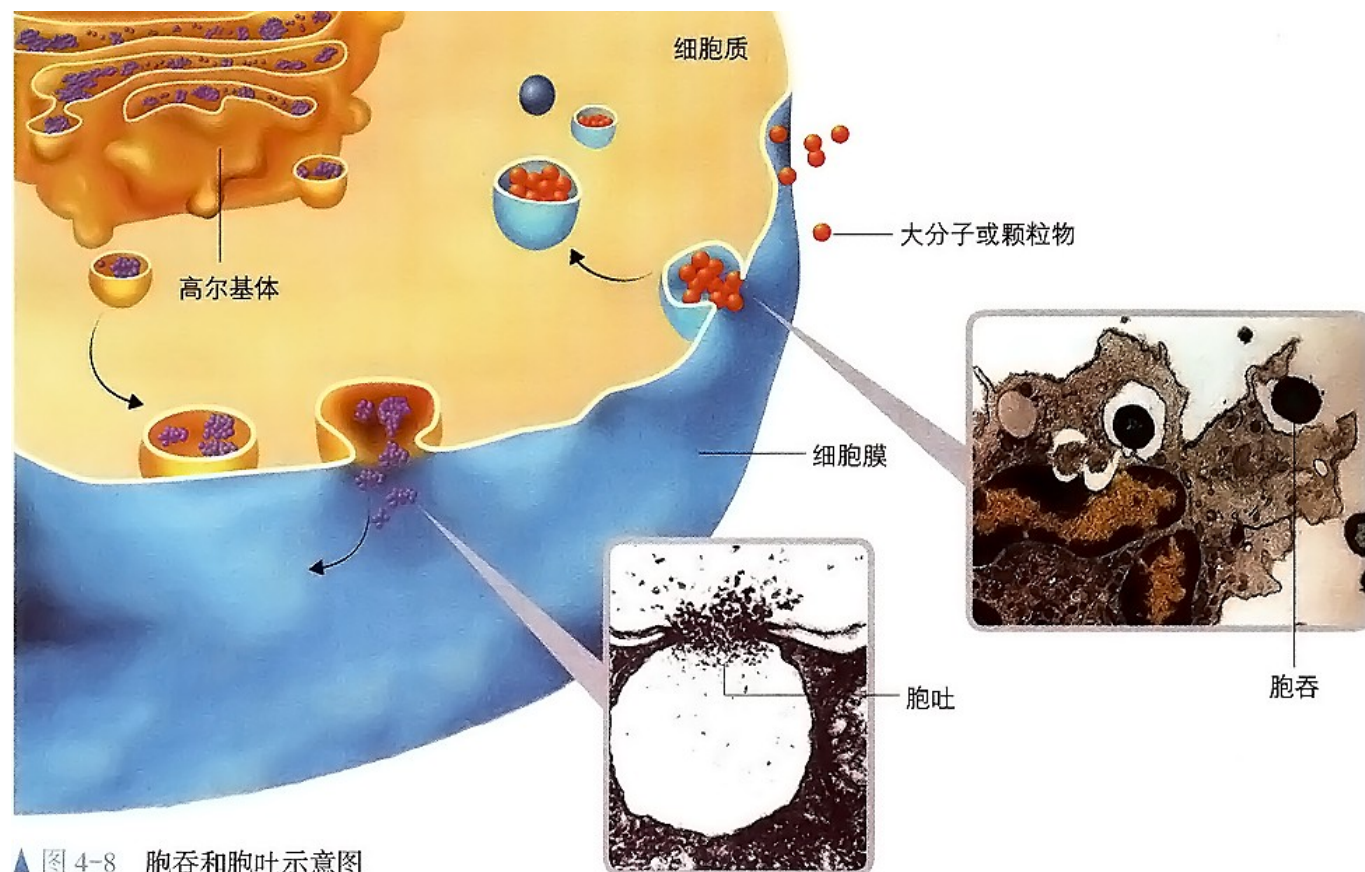
4 □□□□□□

□ 1 □□□

□ □□□□□ □□□□□□

□ 2 □□□□□

□□□□□□□□□□

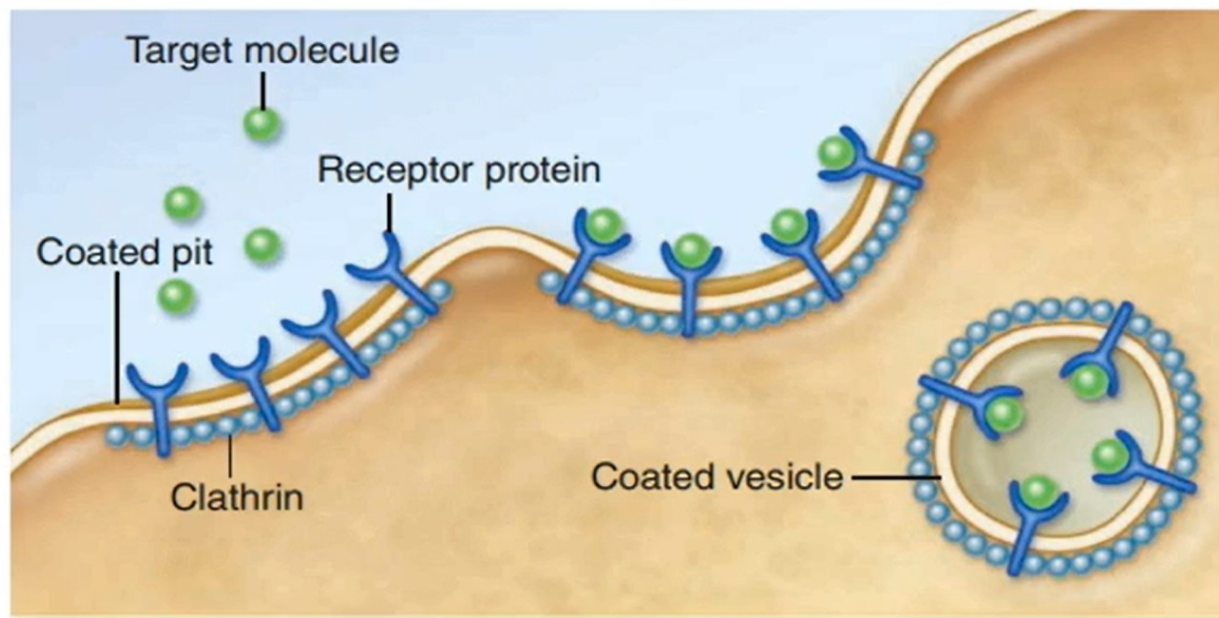
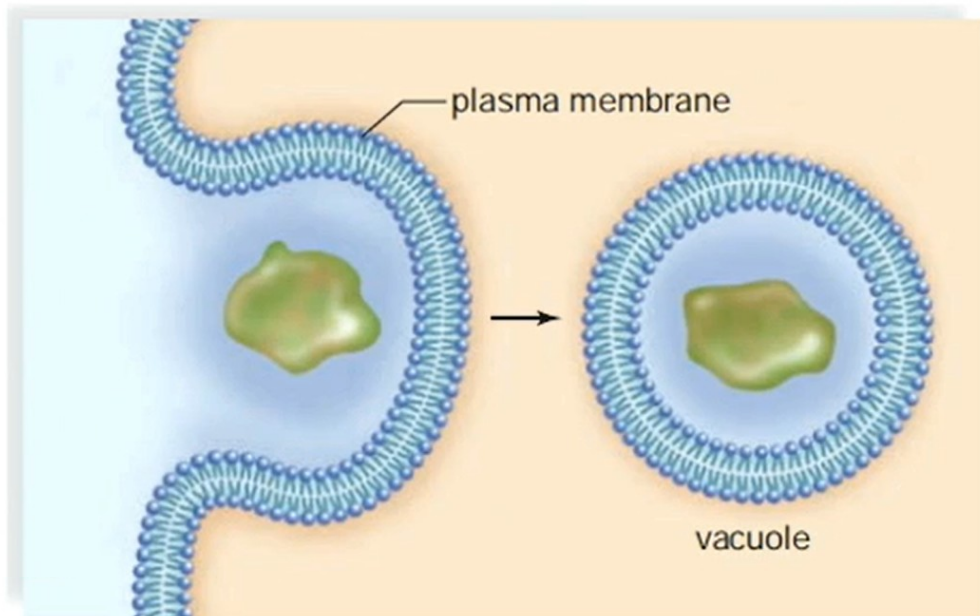


▲ 图 4-8 胞吞和胞吐示意图

4 □□□□□□

□ 3 □□□

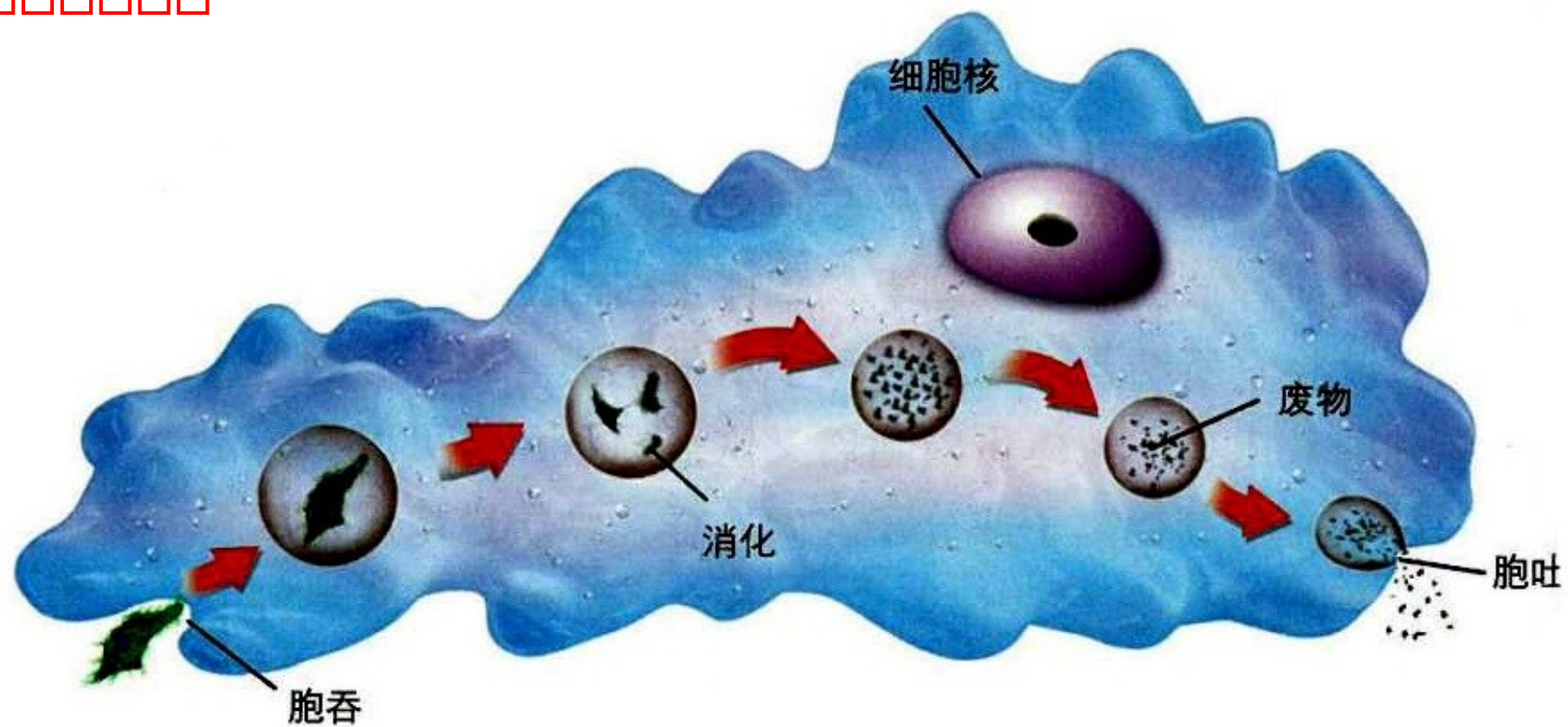
胞吞



4 □□□□□□

□ 4 □□□

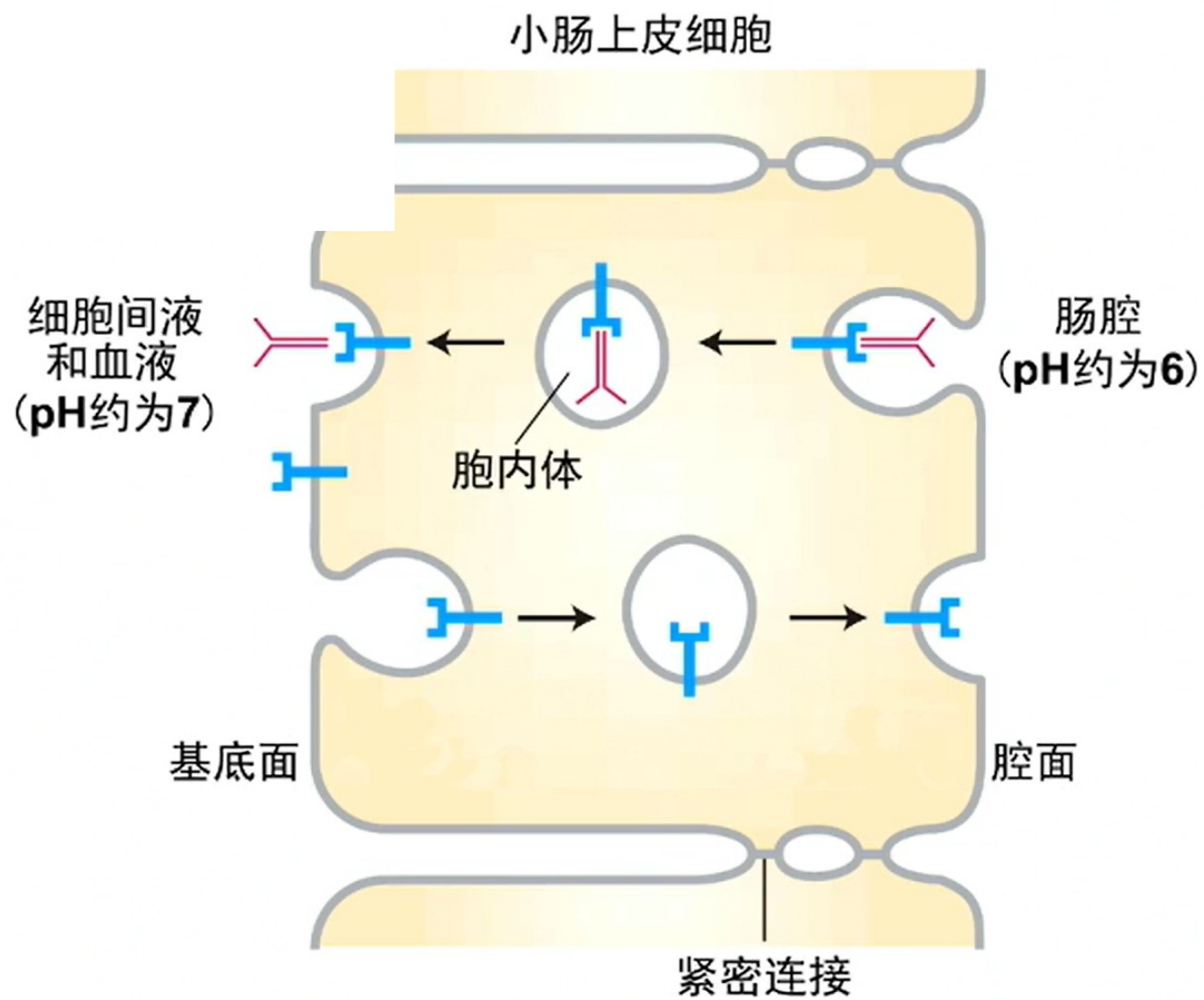
□□□□□□□□



变形虫的胞吞和胞吐示意图

4

4



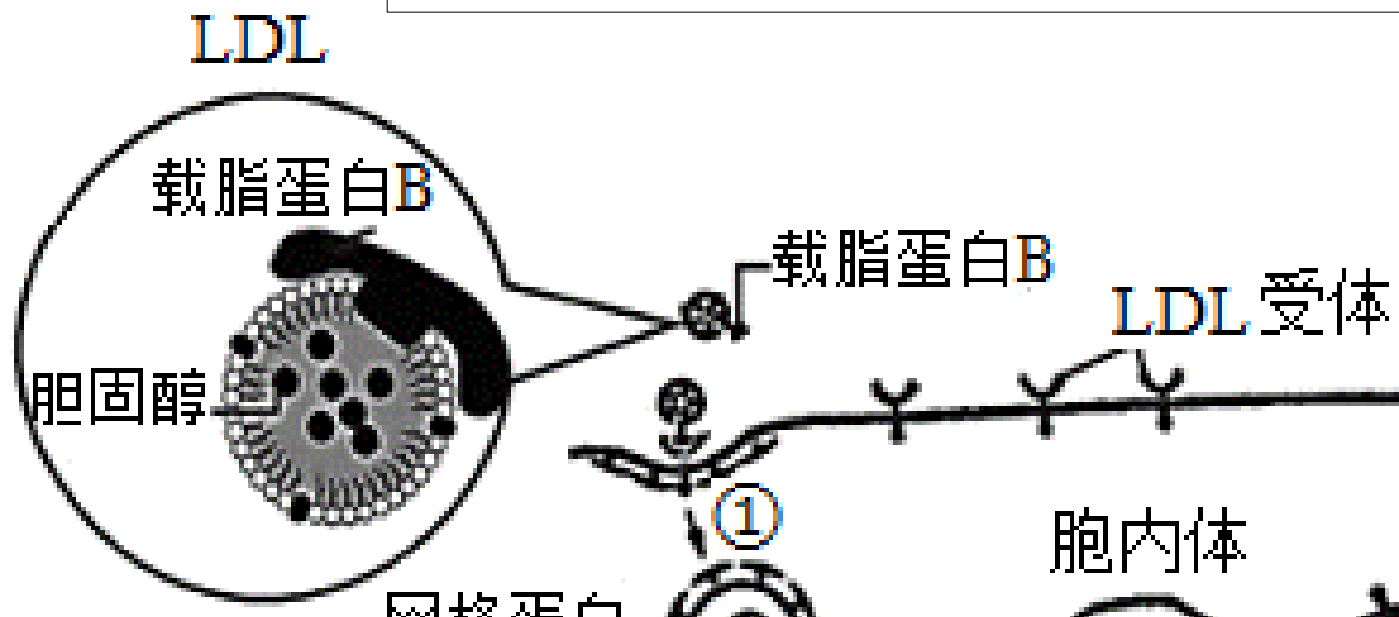
新生儿吸收母乳中的抗体

4

4

LDL

①与构成生物膜的基本支架相比，LDL 膜结构的主要不同点是_____。

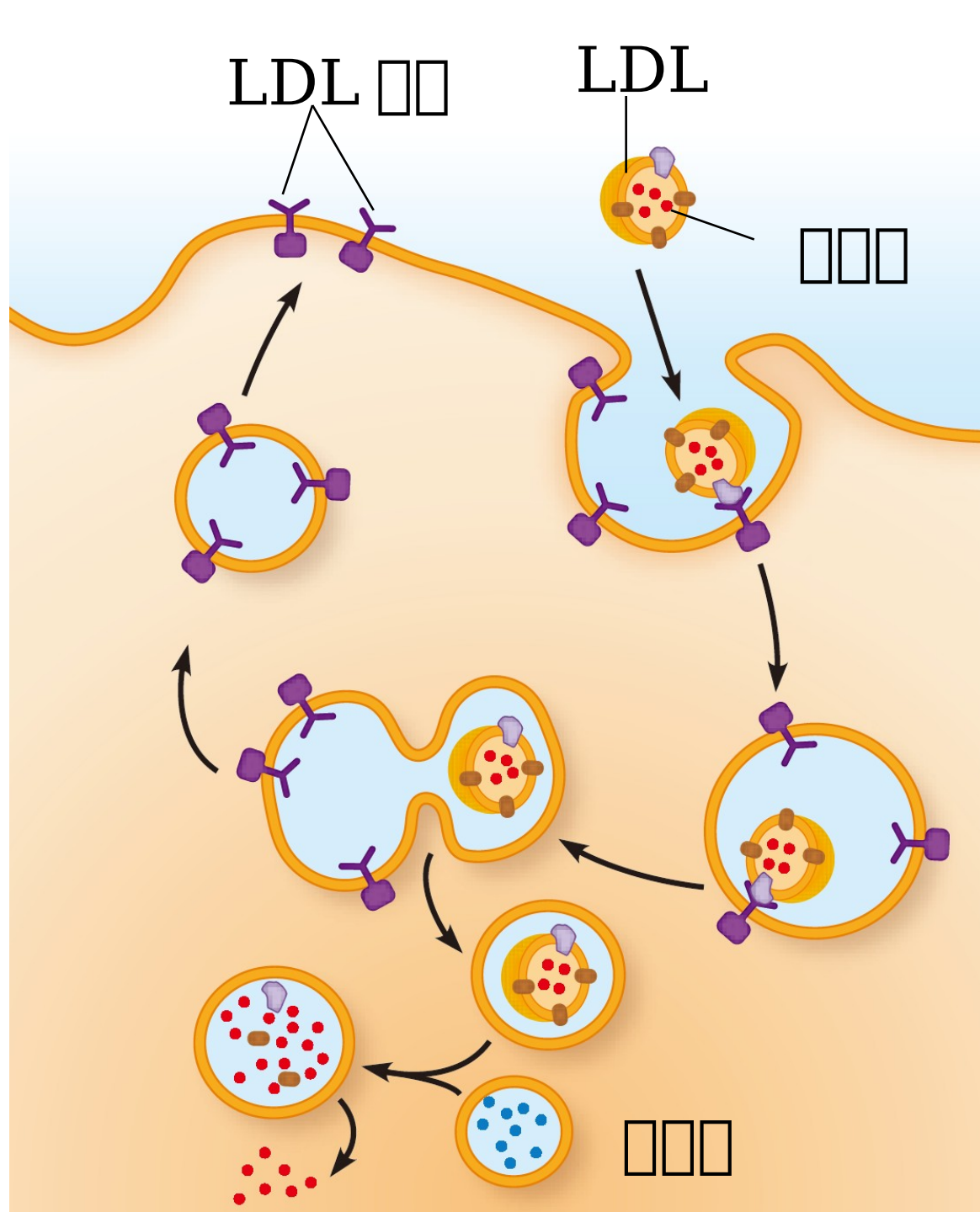


4

4

➤

➤ LDL

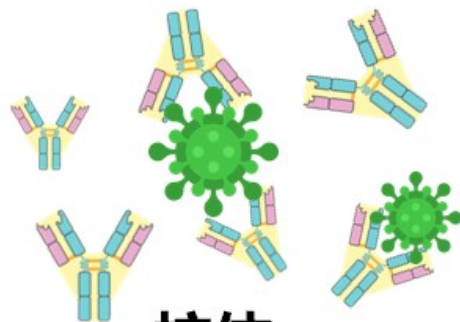


4 □□□□□□

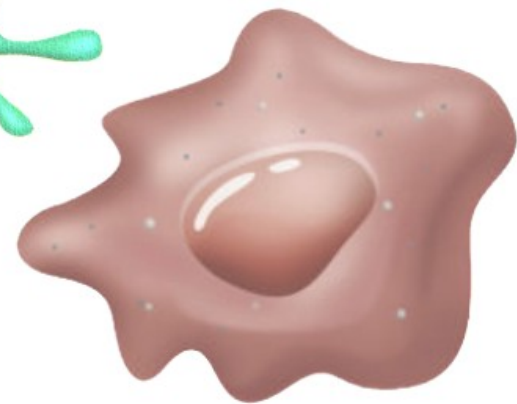
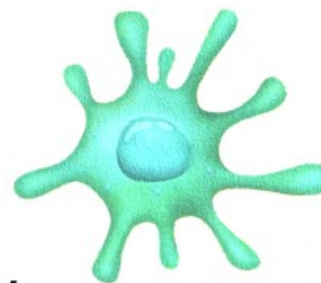
□ 4 □□□



浆细胞(大部分)



抗体

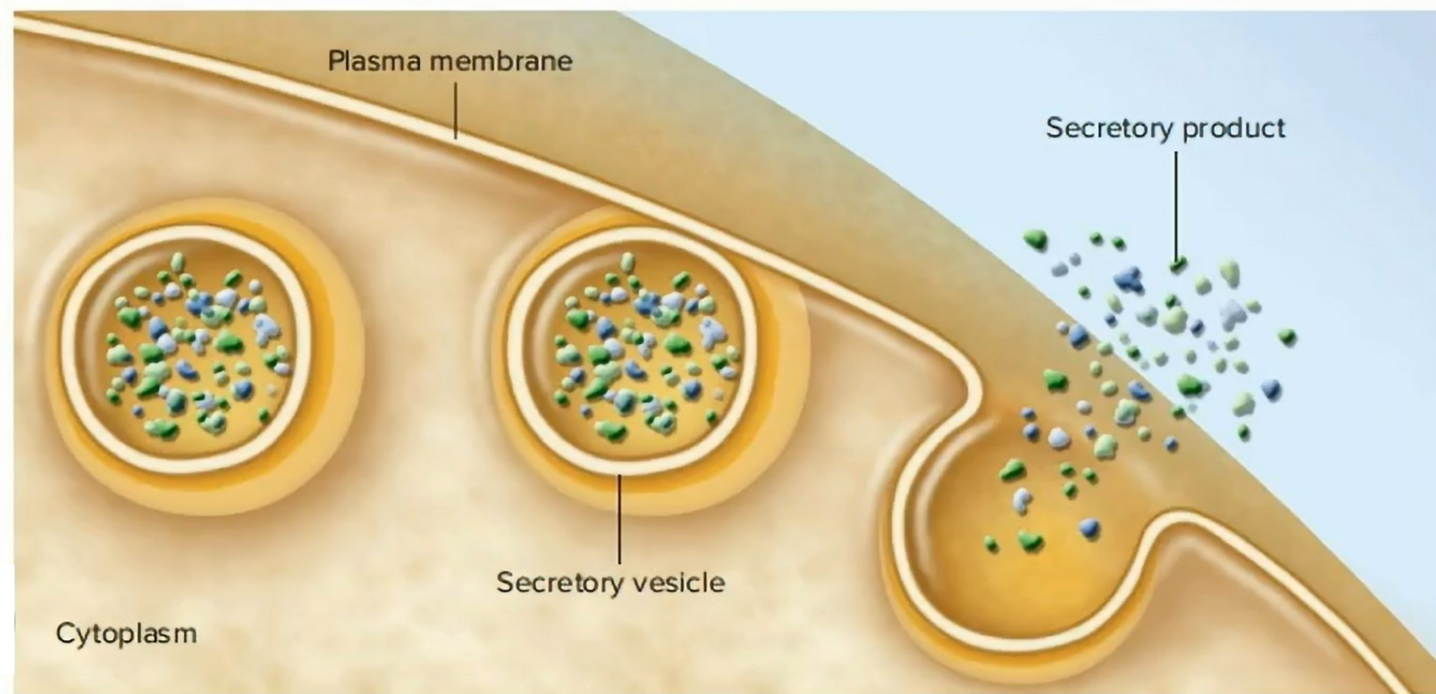


4 □□□□□□

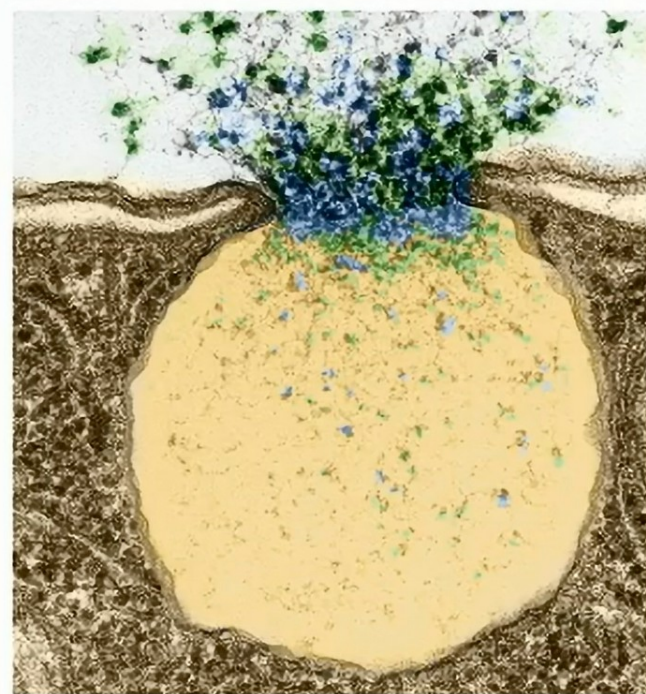
□ 3 □□□

胞吐

大分子物质 $\xrightarrow{\text{在细胞内形成}}$ 囊泡 $\xrightarrow{\text{移动到细胞膜处, 与其融合}}$ 排出



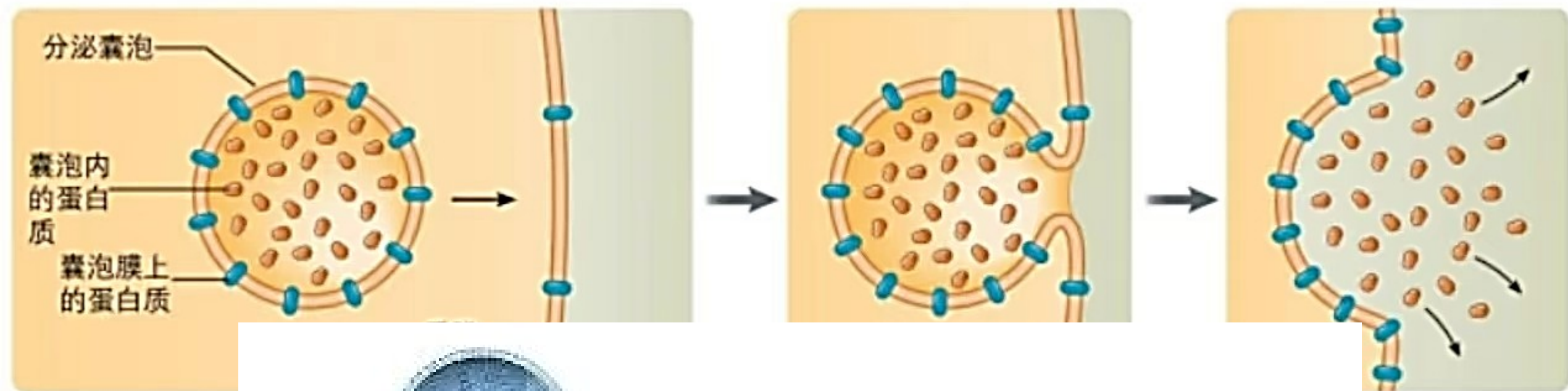
a.



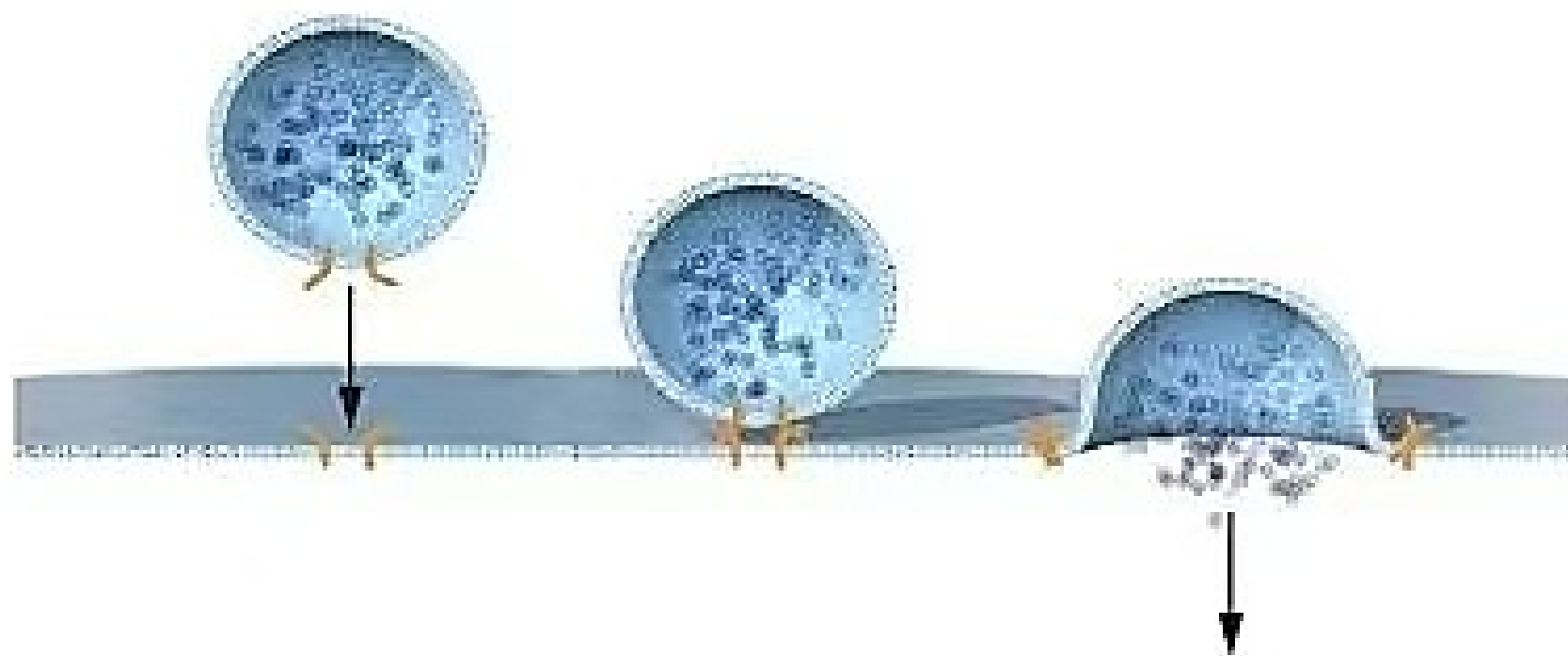
b.

70 nm

A.胞吐



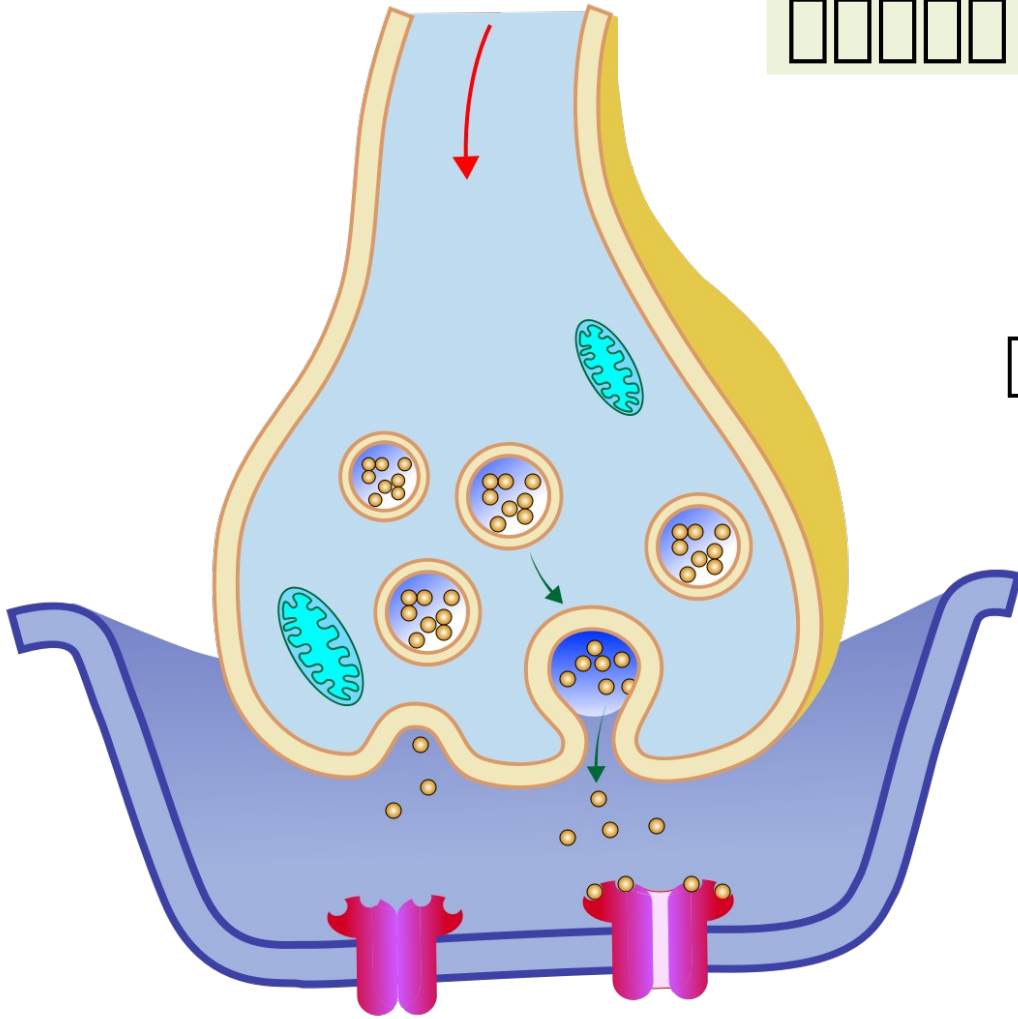
1 分泌囊泡接近



蛋白释放；膜为质膜的一部分

4

4



The diagram consists of two rows of boxes. The top row contains 30 boxes in total. The first 12 boxes are red, and the remaining 18 boxes are black. Below the first 5 boxes of the top row, there are 5 more black boxes, making a total of 17 black boxes and 13 red boxes.



□□□□□□□□

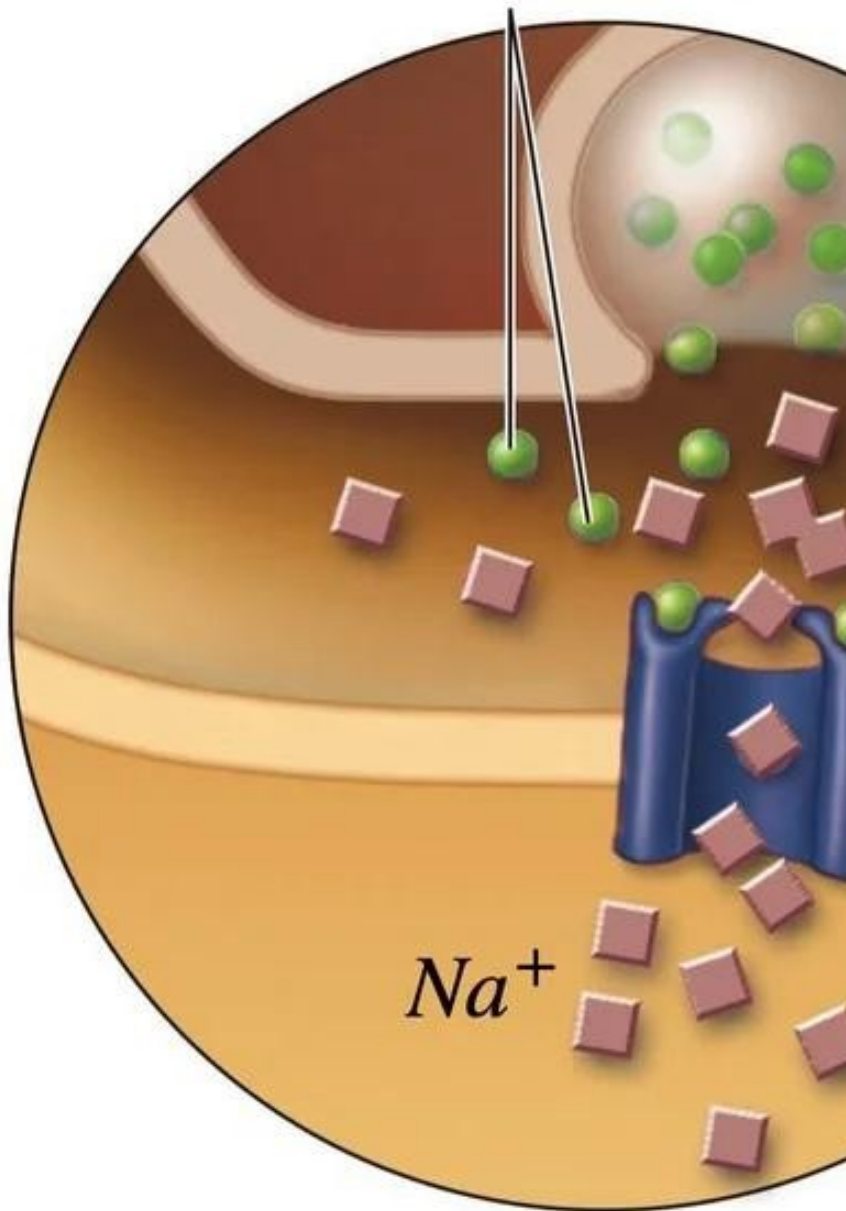
神经递质(ACh)

□□ iron

□□□□□□□□ **Ca²⁺**
□ **Ca²⁺** □□□□□□□□

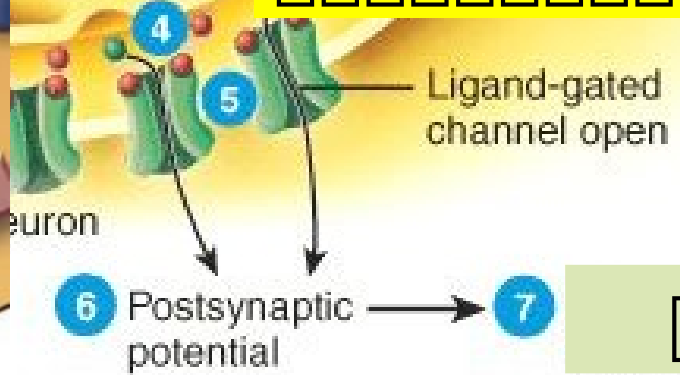
□□□

□□□□□ **Ca**
□□□□□□



□□□□□□□□□□ **Na⁺** □□□□
□□□□□ **Na⁺** □□□□□
Na⁺ □□□

neurotransmitter □□□□□□□□□□



→ 7 □□□□

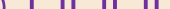
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1. 1 P72“ ”——
 “ ”
 “ ”



1. □□□□□□□□□□



- ① 
- ② 
- ③ 

